

February 7, 2005

**Arthur M. Keller**

Minerva Consulting  
3881 Corina Way  
Palo Alto, CA 94303-4507  
tel +1(650)424-0202  
fax +1(650)424-0424  
email arthur@kellers.org

**Research Interests:**

Electronic commerce, databases, fighting spam, voting, entrepreneurship.

**Education:**

Brooklyn College (City University of New York).  
BS, *summa cum laude*, (2/77) with departmental honors in both majors Mathematics  
and in Computer and Information Science.

Stanford University.  
MS (6/79) in Computer Science.  
PhD (2/85) in Computer Science.  
Thesis topic: Updating Relational Databases Through Views.

**Professional Experience:**

2003 to present	University of California at Santa Cruz, Information Systems and Technology Management. Lecturer and Research Associate.
2001 to 2003	University of California at Santa Cruz, Department of Computer Science. Visiting Associate Professor.
1999 to present	Minerva Consulting, Palo Alto, CA. Managing Partner and co-Founder. Clients include Propel Software (Technical Advisory Board), Virtual Giveaway.com (Advisor), Serus (Advisor), Broader Minds (Founding Advisor and Board Member).
2000 to present	Globallinx Network, Inc., Mountain View, CA. Interim CEO, Board Member, angel investor, and co-Founder.
1998 to 2003	Target Mining Corp. (previously buyermail.com and ccRewards.com), Los Altos, CA. Chief Technical Advisor, Board Member, angel investor, and co-Founder.
1987 to 1999	Stanford University, Computer Science Department. Senior Research Scientist (1992 to 1999), Research Scientist (1991 to 1992), Research Associate (1989 to 1991), Visiting Assistant Professor (1987 to 1989).
1991 to 1999	Persistence Software, San Mateo, CA. Chief Technical Advisor (1992 to 1999), member of Board of Directors (1994 to 1997),

	member of Board of Advisors (1992 to 1994), Technical Advisor (1991 to 1992). (IPO, June 1999.)
1996 to 1998	Epistemics (now called Mergent Systems), Palo Alto, CA. Co-Founder, Chief Financial Officer, Chief Operating Officer, and Board Member. (Acquired by Commerce One, January 2000.)
1989 to 1993	Advanced Decision Systems, Mountain View, CA. Senior Computer Scientist.
1985 to 1989	University of Texas at Austin, Department of Computer Sciences. Assistant Professor (1985 to 1988). Adjunct Assistant Professor (1988 to 1989).
1977 to 1985	Stanford University, Computer Science Department. Research Associate (1985). Research Assistant (1977 to 1985). Acting Assistant Chairman (with rank of Predoctoral Research Affiliate) (1982). Instructor (1979, 1980, 1981).
1981	IBM, San Jose Research Laboratory, San Jose, CA. Academic Associate.
1980	IBM, Thomas J. Watson Research Center, Yorktown Heights, NY. Summer Research Assistant.
1977	Brooklyn College (CUNY), Computer and Information Science Department, Brooklyn, NY. Instructor, "Computers and Society."
1974 to 1977	Brooklyn College (CUNY), Computer Center, Brooklyn, NY. Systems Analyst.

**Courses Taught:**

Winter 2005	Systems Analysis and Design, University of California at Santa Cruz.
Winter 2004	Systems Analysis and Design, University of California at Santa Cruz.
Spring 2003	Systems Analysis and Design, University of California at Santa Cruz.
Spring 2003	Database Management, University of California at Santa Cruz.
Fall 2002	Relational Database Management (graduate course), University of California at Santa Cruz.
Spring 2002	Relational Database Management (graduate course), University of California at Santa Cruz.
Winter 2002	Database Management, University of California at Santa Cruz.
Fall 2001	Database Management, University of California at Santa Cruz.

January 1998	Infomaster, for Epistemics at PanCanadian Petroleum, Calgary, Alberta, Canada.
Summer 1997	Internet Payment: Technologies and Systems (co-organizing instructor), Western Institute for Computer Science.
Summer 1997	Internet Commerce for Business (co-organizing instructor), Western Institute for Computer Science.
Summer 1997	Internet Security (co-organizing instructor), Western Institute for Computer Science.
Summer 1996	Object Data Management (organizing instructor), Western Institute for Computer Science.
Summer 1996	Electronic Commerce on the Internet (organizing instructor), Western Institute for Computer Science.
Summer 1996	Internet Security (organizing instructor), Western Institute for Computer Science.
Summer 1995	Object Data Management (organizing instructor), Western Institute for Computer Science.
Summer 1995	Internet Security (organizing instructor), Western Institute for Computer Science.
Summer 1994	Object Data Management (organizing instructor), Western Institute for Computer Science.
Spring 1994	Introduction to Databases, Universidad Blas Pascal, Córdoba, Argentina.
Spring 1994	Distributed Databases, Universidad Blas Pascal, Córdoba, Argentina.
Fall 1993	Introduction to Databases, Stanford University.
Summer 1993	Object Data Management Laboratory (organizing instructor), Western Institute for Computer Science.
Summer 1993	Object Data Management (organizing instructor), Western Institute for Computer Science.
Winter 1993	File and Database Systems (Graduate Course), Stanford University, co-taught with Hector Garcia-Molina.
Fall 1992	Introduction to Databases, Stanford University.
Summer 1992	Object Data Management (organizing instructor), Western Institute for Computer Science.
Spring 1992	Distributed Databases (Advanced Graduate Course), Helsinki University of Technology.

Spring 1992	Introduction to Databases, Helsinki University of Technology.
Winter 1992	File and Database Systems (Graduate Course), Stanford University.
Fall 1991	Introduction to Databases, Stanford University.
Summer 1991	Distributed Databases (Advanced Graduate Course), Stanford University.
Summer 1991	Databases in Modern System Architectures (organizer), Western Institute for Computer Science.
Fall 1990	Introduction to Databases, Stanford University.
Fall 1989	Introduction to Databases, Stanford University.
Fall 1988	Introduction to Databases, Stanford University.
Spring 1987	Data Management, Univ. of Texas at Austin.
Fall 1986	Database Management (Graduate Course), Univ. of Texas at Austin.
Spring 1986	Database Interfaces (Advanced Graduate Course), Univ. of Texas at Austin.
Fall 1985	Data Management, Univ. of Texas at Austin.
Summer 1985	An Intensive Introduction to T <sub>E</sub> X, T <sub>E</sub> X Users Group.
Summer 1984	An Intensive Introduction to T <sub>E</sub> X, T <sub>E</sub> X Users Group.
Winter 1981	Introduction to Computing, Stanford University.
Winter 1980	Introduction to Computing, Stanford University.
Summer 1979	Introduction to Computing, Stanford University.
Spring 1977	Computers and Society, Brooklyn College.

#### **Honors:**

Who's Who in America, Millennium Edition (2000); Profesor Extraordinario Visitante, Universidad Blas Pascal, Córdoba, Argentina (1994); Best Student Paper, IEEE Computer Data Engineering Conference (1984); George Forsythe Memorial Award for Excellence in Student Teaching, Stanford University Computer Science Dept. (1981-82); President, Brooklyn College Chapter, Pi Mu Epsilon (1976-77); Top score at Brooklyn College on Putnam Exam (1976); Institutional Member Nominee by Brooklyn College to American Mathematical Society (1976).

#### **Scholarships:**

1973 to 1977	New York State Regents Scholarship.
1977 to 1980	National Science Foundation Graduate Fellowship.

**Professional Societies:**

Association for Computing Machinery, Institute for Electrical and Electronics Engineers, IEEE Computer Society Technical Committee on Database Engineering, T<sub>E</sub>X Users Group, Sigma Xi, Mathematical Association of America, American Mathematical Society (Institutional Member Nominee), Open Voting Consortium (Vice President and Chief Operating Officer and Chief Financial Officer, 2003–2005; Secretary, 2005–present).

**Committee Memberships and Assignments:**

Tuition Task Force, Brooklyn College, 1976–77;  
Visitors Committee, Computer Science Dept., Stanford Univ., 1977–78;  
Student Advisor, Computer Science Dept., Stanford Univ., 1978–85;  
Odd Jobs Chairman, Computer Science Dept., Stanford Univ., 1979–80;  
Prancing Pony Cooperative (runs a computerized vending machine), Financial Manager, Computer Science Dept., Stanford Univ., 1980–85;  
Computer Facilities Committee, Computer Science Dept., Stanford Univ., 1978–79, 1981–83;  
Curriculum Committee, Computer Science Dept., Stanford Univ., 1982–83;  
Systems Qualifying Exam Committee, Computer Science Dept., Stanford Univ., 1983;  
LOTS Computer Facility Liaison, Stanford Univ., 1983–84;  
Honor Code Commission, chairman 1984–85, Stanford Univ., 1983–85;  
Prospective Student Committee, Computer Science Dept., Stanford Univ., 1983–84;  
Finance Committee, T<sub>E</sub>X Users Group, 1983–85;  
Committee of Fifteen, Stanford Univ., 1984–85;  
Office Assignments, Computer Science Dept., Stanford Univ., 1982–83, 1984–85;  
Publisher, *California YumYum*, a restaurant guide of the Prancing Pony, 1984–85;  
Question Submission, Computer Science Graduate Record Exam, Educational Testing Service, 1984;  
Program Committee, Int. Conf. on Data Engineering, IEEE Computer Society, February 5–7, 1986;  
International Coordinator, and Steering Committee, T<sub>E</sub>X Users Group, 1985–1987;  
Undergraduate Studies, Computer Sciences Dept., University of Texas at Austin, 1985–86;  
Colloquia, Computer Sciences Dept., University of Texas at Austin, 1985–86;  
Undergraduate Appeals, Computer Sciences Dept., University of Texas at Austin, 1985–86;  
Program Committee, Int. Conf. on Data Engineering, IEEE Computer Society, February 3–5, 1987;  
Vice Chair, IEEE Computer Society Technical Committee on Data Base Engineering, 1986–1987;  
Colloquia, Chairman, Computer Sciences Dept., University of Texas at Austin, 1986–87;  
Communications Officer, Chai Society, Congregation Beth Am, 1987–89;  
Undergraduate Major Committee, Computer Science Dept., Stanford University, 1987–93;  
Masters Degree Committee, Computer Science Dept., Stanford University, 1987–93;

Doctoral Degree Committee, Computer Science Dept., Stanford University, 1987–90;  
Chair, Administrative Computing Committee, Computer Science Dept., Stanford University, 1987–89;  
Chair, Poly DBMS Committee, Computer Science Dept., Stanford University, 1987–88;  
Databases and Knowledge Bases PhD Qualifying Exam Committee, Computer Science Dept., Stanford University, 1987–88;  
Program Committee, Int. Conf. on Data Engineering, IEEE Computer Society, February 7–9, 1989;  
Computer Science DBMS Committee, Computer Science Dept., Stanford University, 1988–89;  
Chair, Databases and Knowledge Bases PhD Qualifying Exam Committee, Computer Science Dept., Stanford University, 1988–90;  
Computer Science Comprehensive Exam Committee, Computer Science Dept., Stanford University, 1988–92;  
Secretary, Community Singles Shabbat Service, Northern California Jewish Federation, 1988–89;  
Program Committee, Int. Conf. on Very Large Data Bases, August 22–25, 1989;  
Vice President—Publicity, Chai Society, Congregation Beth Am, 1989–90;  
Coordinator of Publicity, Community Singles Shabbat Service, Northern California Jewish Federation, 1989–90;  
National Science Foundation, Scientific Review Panel Member, 1993;  
Stanford Computer Forum, Forum Workshops Subcommittee, 1995–1996, Advisory Committee, 1996–99, Student Advisor Mentor Program Coordinator, 1996–98;  
Computer Science Dept. Web Presence committee, 1996–98;  
Cong. Kol Emeth, member of Board of Directors, Chair of Publicity Committee, 1996–2000;  
Program Committee, Int. Workshop on Advanced Transaction Models and Architectures, Goa, India, August 31–September 2, 1996;  
Program Committee, Int. Conference on Information and Knowledge Management, Rockville, MD, November 12–16, 1996;  
Direct Appeal Chair, Ohlone PTA, Palo Alto, CA, 2001–2002;  
Site Council, Ohlone Elementary School, Palo Alto, CA, 2001–2003;  
Student Directory Chair and Email Moderator, Ohlone Elementary School, Palo Alto, CA, 2001–present;  
District Student Directory Committee, Palo Alto Unified School District, Palo Alto, CA, 2004;  
Parent Association Liaison to Development, The Girls' Middle School, Mountain View, CA, 2004–present.

**Publications:**

**Books:**

*A First Course in Computer Programming Using PASCAL*, McGraw-Hill, New York, June 1982, xiii+306pp. Also, International Student Edition, 1985.

*Un premier cours de programmation en Pascal*, McGraw-Hill Éditeurs, Montréal, Québec, Canada, Summer 1985, French translation of *A First Course in Computer Programming Using PASCAL* by Jacques Beaudry, Claude Goutier, and Francine Ouellette, xii+367pp.

*Instructor's Manual for A First Course in Computer Programming Using PASCAL*, McGraw-Hill, New York, January 1984, viii+216pp.

*Programmare in PASCAL*, Zanichelli, Bologna, Italy, October 1983, Italian translation of *A First Course in Computer Programming Using PASCAL* by Giovanni Canzii and Anna Pilenga, ix+294pp.

*Programación en PASCAL*, McGraw-Hill, Madrid, 1983, Spanish translation of *A First Course in Computer Programming Using PASCAL* by Gonzalo León Serrano, José María Vela Bermúdez, and Antonio Vaquero Sánchez, xiii+304pp.

*Hajimetenno Programming: Pascal Ni Yoru (Your First Programming: Introduction by Pascal)*, McGraw-Hill Publishing Co., Japan, Ltd., 1988, Japanese translation of *A First Course in Computer Programming Using PASCAL* by Keiji Moro, xii+312pp.

**Book Chapters:**

"Privacy Issues in an Electronic Voting Machine," Arthur M. Keller, David Mertz, Joseph Lorenzo Hall, and Arnold Urken, in *Privacy and Identity: The Promise and Perils of a Technological Age*, Katherine J. Strandburg and Daniela Raicu, eds., Kluwer Academic Publishing, to appear.

"Penguin: Objects for Programs, Relations for Persistence," Arthur M. Keller and Gio Wiederhold, in *Succeeding with Object Databases*, Akmal B. Chaudhri and Roberto Zicari, eds., John Wiley, 2001.

"Smart Catalogs and Virtual Catalogs," Arthur M. Keller, *Readings in Electronic Commerce*, Ravi Kalakota and Andrew Whinston, eds., Addison-Wesley, 1997.

"The DIANA Approach to Mobile Computing," Arthur M. Keller, Tahir Ahmad, Mike Clary, Owen Densmore, Steve Gadol, Wei Huang, Behfar Razavi, and Robert Pang, *Mobile Computing*, Tomasz Imielinski and Henry F. Korth, eds., Kluwer Academic Press, fall 1995, pp. 651-679.

"Typesetting by Authors," *T<sub>E</sub>X for Scientific Documentation*, Dario Lucarella, ed., Addison-Wesley, 1985, pp. 1-14. Invited paper.

"Updates to Relational Databases Through Views Involving Joins," *Improving Database Usability and Responsiveness*, Peter Scheuermann, ed., Academic Press, New York, 1982, pp. 363-384. Refereed.

**Journal Articles:**

"Using Infomaster to Create a Housewares Virtual Catalog," Arthur M. Keller and Michael R. Genesereth, in *Int. Journal of Electronic Markets*, Institute for Media and Communication Management, University of St. Gallen, Switzerland, Vol. 7, No. 4, 1997, p. 41-45.

"Multivendor Catalogs: Smart Catalogs and Virtual Catalogs," Arthur M. Keller and Michael R. Genesereth, in *EDI Forum, The Journal of Electronic Commerce*, Vol. 9, No. 3, September 1996.

"Zippering: Managing Intermittent Connectivity in DIANA," Arthur M. Keller, Owen Densmore, Wei Huang, and Behfar Razavi, in *ACM NOMAD (Mobile Networks and Applications)*, Baltzer Science Publishers and ACM, Special Issue on Personal Communications, Vol. 2, pp. 357-364, 1997.

"A Predicate-based Caching Scheme for Client-Server Database Architectures," Arthur M. Keller and Julie Basu, *VLDB Journal*, 5:1, January 1996, pp. 35-47.

"Independent Updates and Incremental Agreement in Replicated Databases," Stefano Ceri, Maurice A.W. Houtsma, Arthur M. Keller, Pierangela Samarati, *Journal of Parallel and Distributed Databases*, 3:3, July 1995, pp. 225-246.

"Comments on Bancilhon and Spyrtos' 'Update Semantics and Relational Views'" *ACM Trans. on Database Systems*, 12:3, September 1987, pp. 521-523.

"Set-Theoretic Problems of Null Completion in Relational Databases," *Information Processing Letters*, 22:5, 28 April 1986, pp. 261-265.

"The Role of Semantics in Translating View Updates," *IEEE Computer*, 19:1, January 1986, pp. 63-73.

"On the Use of an Extended Relational Model to Handle Changing Incomplete Information," by Arthur M. Keller and Marianne Winslett Wilkins, *IEEE Trans. on Software Eng.*, SE-11:7, July 1985, pp. 620-633.

**Publications in Refereed Proceedings:**

"A PC-Based Open-Source Voting Machine with an Accessible Voter-Verifiable Paper Ballot," Arthur M. Keller, Alan Dechert, Karl Auerbach, and David Mertz, Amy Pearl, and Joseph Lorenzo Hall, in *USENIX '05, FREENIX track*, Anaheim, CA, April 10-15, 2005.

"Privacy Issues in an Electronic Voting Machine," (Extended Abstract) Arthur M. Keller, David Mertz, Joseph Lorenzo Hall, and Arnold Urken, in *Workshop on Privacy in the Electronic Society (WPES 2004)*, Washington, DC, October 28, 2004.

"No-Email-Collection Flag," Matthew Prince, Arthur M. Keller, and Ben Dahl, in *Conference on Email and Anti-Spam*, Mountain View, CA, July 30-31, 2004.

"Consistent Visualization and Querying of Spatial Databases by a Location-Aware Mobile Agent," by Suresh K. Lodha, Nikolai M. Faaland, Grant Wong, Amin P.



Charaniya, Srikumar Ramalingam, and Arthur Keller, *Proceedings of Computer Graphics International (CGI)*, Tokyo, Japan, July 2003.

"Collaboration Software to Reduce Inventory and Increase Response" (extended abstract), by Indu Bingham, Barbara Hoeffle, Kim Phan, Jim Sizemore, and Arthur M. Keller, *2003 ACM Conference on E-Commerce*, San Diego, CA, June 2003.

"High Performance and Scalability Through Associative Client-Side Caching," Julie Basu, Meikel Pöss, and Arthur M. Keller, in *Seventh International Workshop on High Performance Transaction Systems*, Pacific Grove, CA, September 1997.

"Centralized versus Distributed Index Schemes in OODBMS—A Performance Analysis," by Julie Basu, Arthur M. Keller, and Meikel Pöss, *ADBIS*, August 1997.

"Infomaster: An Information Integration System," by Michael R. Genesereth, Arthur M. Keller, and Oliver M. Duschka, in *ACM SIGMOD*, May 1997.

"Zippering: Managing Intermittent Connectivity in DIANA," Arthur M. Keller, Owen Densmore, Wei Huang, and Behfar Razavi, in *2nd Mobile Computing Workshop*, Hsinchu, Taiwan, March 1996.

"Infomaster: A Virtual Information System," Donald F. Geddis, Michael R. Genesereth, Arthur M. Keller, and Narinder P. Singh, in *Intelligent Information Agents Workshop*, at CIKM '95, December 1995.

"Smart Catalogs and Virtual Catalogs," (invited talk) in *An International Conference on Frontiers of Electronic Commerce, Sixth Organizational Computing, Coordination, and Collaboration Conference*, Austin, TX, October 1995.

"Migrating to Object Data Management," Arthur M. Keller and Paul Turner, *OOPSLA Workshop on Legacy Systems and Object Technology*, Austin, TX, October 1995.

"Architecting Object Applications for High Performance with Relational Databases," Shailesh Agarwal, Christopher Keene, and Arthur M. Keller, *OOPSLA Workshop on Object Database Behavior, Benchmarks, and Performance*, Austin, TX, October 1995.

"Reflections on Object-Relational Applications," Paul Turner and Arthur M. Keller, *OOPSLA Workshop on Object and Relational Databases*, Austin, TX, October 1995.

"Smart Catalogs and Virtual Catalogs," Arthur M. Keller, *Usenix Workshop on Electronic Commerce*, July 1995.

"Flexible Relation: An Approach for Integrating Data from Multiple, Possibly Inconsistent Databases," Shailesh Agarwal, Arthur M. Keller, Krishna Saraswat, Gio Wiederhold, *Int. Conf. on Data Engineering*, Taipei, Taiwan, March 1995.

"Two-Level Caching of Composite Object Views of Relational Databases," Catherine Hamon and Arthur M. Keller, *Int. Conf. on Data Engineering*, Taipei, Taiwan, March 1995.

"A Version Numbering Scheme with a Useful Lexicographical Order," Arthur M. Keller and Jeffrey D. Ullman, *Int. Conf. on Data Engineering*, Taipei, Taiwan, March 1995.

"Developing an Internet Presence with On-line Electronic Catalogs," William T. Wong and Arthur M. Keller, *Workshop on Electronic Commerce*, December 1994.

"A Smart Catalog and Brokering Architecture for Electronic Commerce," Arthur M. Keller, Michael R. Genesereth, Narinder P. Singh, and Mustafa A. Syed, *Workshop on Electronic Commerce*, December 1994.

"The DIANA Approach to Mobile Computing," Tahir Ahmad, Mike Clary, Owen Densmore, Steve Gadol, Arthur M. Keller, and Robert Pang, *MOBIDATA: Workshop on Mobile and Wireless Information Systems*, New Brunswick, NJ, November 1994. Also appeared in *MOBIDATA: An Internet journal of mobile computing* Vol. 1, No. 1, November 1994, available through WWW at URL <http://rags.rutgers.edu/journal/cover.html>

"A Predicate-based Caching Scheme for Client-Server Database Architectures," Arthur M. Keller and Julie Basu, *Third International Conference on Parallel and Distributed Information Systems*, Austin, TX, September 1994.

"Implementation of Object View Query on a Relational Database," Tetsuya Takahashi and Arthur M. Keller, *Data and Knowledge Systems for Manufacturing and Engineering*, Hong Kong, May 1994.

"A C++ Binding for Penguin: a System for Data Sharing among Heterogeneous Object Models," Arthur M. Keller, Catherine Hamon, *Foundations on Data Organization (FODO)* 93, October 1993, Chicago.

"Querying Heterogeneous Object Views of a Relational Database," Tetsuya Takahashi and Arthur M. Keller, *Int. Symp. on Next Generation Database Systems and Their Applications (NDA)* 93, Fukuoka, Japan, September 1993.

"Persistence Software: Bridging Object-Oriented Programming and Relational Databases," Arthur M. Keller, Richard Jensen, and Shailesh Agarwal, *ACM SIGMOD*, May 1993.

"Achieving Incremental Consistency among Autonomous Replicated Databases," Stefano Ceri, Maurice A.W. Houtsma, Arthur M. Keller, Pierangela Samarati, *DS-5 (Semantic Interoperability)*, November 1992.

"The Case for Independent Updates," Stefano Ceri, Maurice A.W. Houtsma, Arthur M. Keller, Pierangela Samarati, *Workshop on Management of Replicated Data II*, Monterey California, November 1992.

"Flexible Relations: An Approach for Integrated Data in a Semiconductor Manufacturing Environment," S.S. Agarwal, K.C. Saraswat, G. Wiederhold, and A.M. Keller, *Seventh Annual SRC/DARPA CIM-IC Workshop*, Stanford California, August 1992.

"Adaptive Parallel Hash Join in Main-Memory Databases," Arthur M. Keller and Shaibal Roy, *First International Conference on Parallel and Distributed Information Systems (PDIS)*, Miami Florida, December 1991.

"Implementing Hypertext Database Relationships through Aggregations and Exceptions," Yoshinori Hara, Arthur M. Keller, and Gio Wiederhold, *ACM HYPERTEXT '91*, December 1991.

"Relationship Abstractions for an Effective Hypertext Design: Augmentation and Globalization," Yoshinori Hara, Arthur M. Keller, and Gio Wiederhold, *Database and Expert Systems Applications, DEXA '91*, August 1991.

"Updating Relational Databases through Object-Based Views," by Thierry Barsalou, Niki Siambela, Arthur M. Keller, and Gio Wiederhold, *ACM SIGMOD*, Denver, CO, May 1991.

"Unifying Database and Programming Language Concepts Using the Object Model" (extended abstract), *Int. Workshop on Object-Oriented Database Systems*, IEEE Computer Society, Pacific Grove, CA, September 1986.

"Choosing a View Update Translator by Dialog at View Definition Time," *12th Int. Conf. on Very Large Data Bases*, Kyoto, Japan, August 1986, pp. 467-474.

"Framework for the Security Component of an Ada DBMS" (extended abstract), by David Spooner, Arthur M. Keller, Gio Wiederhold, John Salasin, and Deborah Heystek, *12th Int. Conf. on Very Large Data Bases*, Kyoto, Japan, August 1986, pp. 347-354.

"Framework for the Security Component of an Ada DBMS" (extended abstract), by David Spooner, Arthur M. Keller, Gio Wiederhold, John Salasin, and Deborah Heystek, *Proc. National Computer Security Center Invitational Workshop on Database Security*, Baltimore, June 1986, 10 pp.

"Reference Model for Ada Interfaces to Database Management Systems," by Fred Friedman, Arthur Keller, John Salasin, Gio Wiederhold, Murray R. Berkowitz, and David L. Spooner, *Proc. 1986 IEEE Computer Society Data Engineering Conference*, Los Angeles, February 1986, pp. 492-506.

"Algorithms for Translating View Updates to Database Updates for Views Involving Selections, Projections, and Joins" (extended abstract), *Proc. of Fourth ACM SIGACT-SIGMOD Symp. on Principles of Database Systems*, March 1985, pp. 154-163.

"On Complementary and Independent Mappings on Databases," by Arthur M. Keller and Jeffrey D. Ullman, *1984 ACM-SIGMOD Int. Conf. on Management of Data*, Boston, June 1984, pp. 143-148.

"Approaches for Updating Databases With Incomplete Information and Nulls," by Arthur M. Keller and Marianne Winslett Wilkins, *IEEE Computer Society Int. Conf. on Data Engineering*, Los Angeles, April 1984, pp. 332-340.

"Validating Updates Against the Structural Model," by Arthur M. Keller and G. Wiederhold, in *Proc. IEEE Computer Society's Symposium on Reliability in Distributed Software and Database Systems*, Pittsburgh, July 1981.

"FLASH: A Language-Independent, Portable File System," by J. Allchin, A.M. Keller, and G. Wiederhold, *Proc. ACM-SIGMOD 1980 Int. Conf. Management of Data*, Santa Monica, May 1980, pp. 151-156.

**Other Publications:**

"Performance Analysis of an Associative Caching Scheme for Client-Server Databases," by Julie Basu, Meikel Pöss, and Arthur M. Keller, Technical Note STAN-CS-TN-97-61, Stanford University, Computer Science Dept., September 1997.

"Integrating Data into Objects Using Structural Knowledge," by Gio Wiederhold and Arthur M. Keller, in *Third International Symposium on Command and Control Research and Technology (3ICCRTS)*, National Defense University, 17-20 June 1997, pages 842-853.

"Performance Evaluation of Centralized and Distributed Index Schemes for a Page Server OODBMS," by Julie Basu, Arthur M. Keller and Meikel Pöss, Technical Note CS-TN-97-55, Stanford University, Computer Science Dept., March 1997.

"Infomaster and Information Integration," by Donald F. Geddis, Michael R. Genesereth, and Arthur M. Keller, Workshop on Artificial Intelligence-based Tools to Help W3 Users, at the 5th Int. World Wide Web Conf., Paris, May 1996.

"Electronic Catalogs," moderator of panel at International Conference on Data Engineering, New Orleans, LA, March 1, 1996.

"CommerceNet: Overview and Electronic Catalogs," by Arthur M. Keller, *Info Tech '95*, Osaka, Japan, October, 1995.

"Versions, Configurations, and Constraints in CEDB," H. Craig Howard, Arthur M. Keller, Ashish Gupta, Karthik, Krishnamurthy, Kincho H. Law, Paul M. Teicholz, Sanjai Tiwari, Jeffrey D. Ullman, CIFE Working Paper #31, Center for Integrated Facilities Engineering, Stanford University, April 1994.

"Integrated Data Exchange and Concurrent Design for Engineered Facilities," H. Craig Howard, Jeffrey Ullman, Kincho Law, Arthur Keller, Sanjai Tiwari, Ashish Gupta, and Karthik Krishnamurthy, Proceedings of NSF Scientific Database Projects 1991-1993, AAAS Workshop on Data Management for the Scientist and Engineer, Boston, February 1993.

"Independent Updates and Incremental Agreement in Replicated Databases," Stefano Ceri, Maurice A.W. Houtsma, Arthur M. Keller, Pierangela Samarati, Stanford University, Computer Science Technical Report STAN-CS-92-1446, October 1992.

"A Classification of Update Methods for Replicated Databases," Stefano Ceri, Maurice A.W. Houtsma, Arthur M. Keller, Pierangela Samarati, Stanford University, Computer Science Technical Report STAN-CS-91-1392, October 1991.

"Formal Methods Position Paper," Arthur M. Keller and John J. Kenney, TI/DARPA Open OODB Workshop II, Dallas, TX, September 1991.

"Implementing Hypertext Database Relationships through Aggregations and Exceptions," Yoshinori Hara, Arthur M. Keller, Peter K. Rathmann, and Gio Wiederhold, Stanford University, Computer Science Technical Report STAN-CS-91-1381, September 1991.

- "Open OODB Issues," Arthur M. Keller and Doug Morgan, TI/DARPA Open OODB Workshop I, Dallas, TX, March 1991.
- "Modularization of the DADAISM Ada Database System Architecture," Arthur M. Keller and Gio Wiederhold, working document, May 1991.
- "Sequenced vs. Pipelined Parallel Joins in Paradata," by Zhu Liping, Arthur M. Keller, and Gio Wiederhold, Stanford University, Computer Science Dept., Technical Report STAN-CS-91-1351, February 1991.
- "Selected Database Research at Stanford," by Arthur M. Keller, Peter Rathmann, Jeff Ullman, and Gio Wiederhold, *SIGMOD Record*, December 1990.
- "Relational Updates Through View Objects," by Thierry Barsalou, Arthur M. Keller, and Gio Wiederhold, Knowledge Systems Laboratory Report KSL-90-29, Medical Computer Science, Stanford University, March 1990.
- "Concurrent Use of B-trees with Variable-Length Entries," by Arthur M. Keller and Gio Wiederhold, *SIGMOD Record*, Vol. 17, No. 2, June 1988, pp. 89-90.
- "Notes on Databases on Parallel Computers," by Gio Wiederhold and Arthur M. Keller, April 1988.
- "A Prototype View Update Translation Facility," by Arthur M. Keller and Laurel Harvey, Report TR-87-45, Dept. of Computer Sciences, Univ. of Texas at Austin, December 1987, 11pp.
- "A Reliable and Deadlock-Free Multi-Indexed B<sup>+</sup>-Tree," Report TR-86-19, Dept. of Computer Sciences, Univ. of Texas at Austin, July 1986, 17pp.
- "Modularization of an Ada Database System," by Gio Wiederhold, Arthur M. Keller, Sham Navathe, David Spooner, Murray Berkowitz, Bill Brykczynski, and John Salasin, *International pre-VLDB Symposium*, Beijing, China, August 1986, pp. 202-232. Also extended abstract presented at *Advanced Database Symposium*, Information Processing Society of Japan, Tokyo, August 1986, pp. 135-142.
- "Computer Science Comprehensive Examinations 1981/82-1984/85," editor, by the faculty and students of the Computer Science Department of Stanford University, Report STAN-CS-85-1062, August 1985.
- "Updating Relational Databases Through Views," Ph.D. dissertation, Stanford University, Computer Science Dept., Report STAN-CS-85-1040, February 1985.
- "Databases: The Key to Organizing and Sharing Information," *CIS Newsletter*, Stanford Univ., June 1984.
- "Updates to Relational Databases Through Views Involving Joins," IBM Research Report RJ3282, IBM Research Laboratory, San Jose, CA, October 1981.
- "Anatomy of a T<sub>E</sub>X Macro Package," in *TUGboat: The T<sub>E</sub>X Users Group Newsletter*, American Mathematical Society, Providence, RI, 2:1, February 1981, pp. 56-86.
- "S-1 Linker," by A.M. Keller and G. Wiederhold, Stanford Univ. Digital Systems Lab, Technical Note 147, November 1978.